Proceedings of ICILLP 2026 Symposium: AI Ethics, Law, Social Policy, and Governance in the Digital Age
DOI: 10.54254/2753-7048/2026.HZ37904

Research on the Protection of Consumers' Right of Fair Deal in Big Data Differential Pricing

Yining Dong

The High School Affiliated to Renmin University of China, Beijing, China
18601086112@163.com

Abstract. Aimed the rapid growth of the digital economy, major internet platforms increasingly use big data and algorithms for differential pricing. "Big-data-driven price discrimination," as a problematic form of differential pricing, has gradually become widespread. Platforms construct user profiles based on personal information, consumption levels, device models, and browsing history to estimate users' maximum willingness to pay, enabling personalized pricing, or "different prices for different users." This practice undermines substantive fairness in online transactions and seriously infringes upon consumers' right to fair transactions. China has established a basic regulatory framework through laws and regulations including the Law of the People's Republic of China on the Protection of Consumer Rights and Interests, the Personal Information Protection Law of the People's Republic of China, and the Rules on Price Conduct of Internet Platforms. Yet enforcement lags behind evolving platform practices. Key challenges include: vague legal standards for identifying unlawful pricing, opacity and complexity of algorithmic decision-making, consumers' difficulty meeting evidentiary burdens, and high costs of redress. This paper analyzes how big-data-driven price discrimination operates, identifies gaps and delays in current law through case review, and maps consumer obstacles. It proposes four targeted improvements: refining legal rules to clarify applicable standards, promoting algorithm transparency and strengthening full-process regulation, supporting consumer rights protection and redress, and balancing business efficiency with transactional fairness. The findings provide actionable insights for regulating algorithmic pricing and improving governance in the digital economy.

Keywords: Big data differential pricing, Big-data-driven price discrimination, Consumers' right of fair deal

1. Introduction

With the rapid development of the digital economy, online shopping, food delivery, travel, ride-hailing services, and live streaming e-commerce have become deeply embedded in daily life. Big data and algorithms have become essential tools for platform operations. Platforms collect massive amounts of user data and analyze consumer behaviors to optimize resource allocation, reduce customer acquisition costs, and dynamically adjust prices according to changes in supply and demand. However, in pursuit of higher profits, many internet platforms impose hidden price

© 2026 The Authors. This is an open access article distributed under the terms of the Creative Commons Attribution License 4.0 (https://creativecommons.org/licenses/by/4.0/).

DOI: 10.54254/2753-7048/2026.HZ37904

premiums based on users' identities and consumption patterns, giving rise to "big-data-driven price discrimination."

The core conflict lies between platforms' profit motives and consumers' four statutory rights: the right to obtain information, the right of fair transactions, the right to free choice, and the right to personal information protection [1]. Platforms possess substantial user data and thus hold an informational advantage, while consumers lack transparency regarding pricing mechanisms and face difficulties in comparing prices. Even when they identify price differences across users, they may struggle to protect their rights because of limited access to algorithmic models and difficulties in obtaining evidence.

Although existing laws regulate price discrimination and price fraud, they do not explicitly define "big-data-driven price discrimination," leaving the boundary between legal and illegal practices unclear. Algorithmic black boxes, information asymmetry, and difficulties in consumer redress further reinforce consumers' disadvantaged position. Therefore, this paper combines normative and case analysis, focusing on the protection of consumers' right to fair transactions, to examine the mechanisms of big-data-driven differential pricing, identify shortcomings in the current legal framework, and propose regulatory improvements based on past cases.

Therefore, this study clarifies the legal boundaries of big-data differential pricing and offers actionable insights for improving platform algorithm governance—balancing business innovation with consumer rights protection. Its findings support fairer, more accountable digital economy transactions.

2. Formation mechanism and legal regulatory system of big data differential pricing in China

2.1. Mechanism of big data differential pricing

The mechanism of big data differential pricing generally involves three steps. First, user data collection. Platforms collect information during user registration, browsing, transactions, and service use. Such collection should comply with the principles of legality, propriety, and necessity and remain within legally permitted boundaries. The data may include registration details, browsing duration, historical orders, device models, purchase frequency, coupon collection records, and product usage time. Second, algorithmic analysis and user profiling. Platforms use personal information, behavioral data, and consumption preferences as pricing references. For example, search frequency may indicate product interest, while repeated purchases may signal stronger demand. By combining such information with historical spending, platforms can estimate consumers' willingness to pay and price sensitivity, thereby supporting personalized pricing [2]. Third, differentiated price presentation. Under the same transaction conditions, platforms may display different prices, discounts, or promotional combinations to different users. For instance, long-term or high-spending users may receive fewer discounts, while new or price-sensitive users may receive greater subsidies. However, differential pricing is not inherently illegal. Its legality depends on factors such as transaction conditions, information disclosure, pricing basis, and consumer awareness.

2.2. Application of consumers' right to fair deal in digital markets

Article 10 of *the Law of the People's Republic of China on the Protection of Consumer Rights and Interests* provides that consumers have the right to fair trading conditions, including quality

DOI: 10.54254/2753-7048/2026.HZ37904

assurance, reasonable prices, and accurate measurement, and have the right to refuse compulsory transactions by business operators [3].

The right to fair deal includes formal and substantive fairness. Formal fairness emphasizes equal procedural treatment and voluntary transactions, while substantive fairness considers information asymmetry between the parties and supports legal protection of the weaker party [1]. In traditional markets, although businesses have pricing autonomy, product prices are generally disclosed and uniformly presented to consumers. Consumers can also compare prices directly, while unfair transactions can be addressed under *the Consumer Rights and Interests Protection Law*. In digital markets, however, information asymmetry between consumers and platforms is more pronounced. Consumers typically see only the prices displayed to them, while platforms can use algorithmic models to analyze large amounts of user data and make personalized pricing decisions.

From the perspective of formal fairness, consumers still have the freedom to decide whether to place an order, and platforms do not necessarily impose compulsory transactions. Yet from a practical fairness perspective, if a platform changes different prices for the same product or service under the same transaction conditions, based on consumers' willingness or ability to pay, consumption preferences, or purchasing habits, without informing them, such practices may undermine the protection of consumers' right to fair deal.

2.3. Current relevant laws and regulations

Article 10 of *the Law of the People's Republic of China on the Protection of Consumer Rights and Interests* establishes consumers' right of fair deal, Article 29 regulates the collection and use of consumers' personal information, while Article 55 provides triple compensation for consumer fraud, providing a basis for civil claims related to big-data-driven price discrimination [3].

Article 24 of *the Personal Information Protection Law* requires automated decision-making based on personal information to ensure the transparency and fairness and prohibits unreasonable differential treatment in transaction prices and other conditions [4].

In terms of algorithm governance, Article 15 of the *Internet Platform Pricing Behavior Rules* prohibits platforms from using consumer information to set different prices under the same conditions, *Article 21 of the Algorithm Recommendation Management Regulation*s also requires algorithm recommendation providers to protect consumers' rights to fair transactions and prohibits differential treatment based on consumer information [5, 6].

2.4. Defining the boundary between legal pricing and big data price discrimination

From a business perspective, legitimate differential pricing can have positive effects. Seasonal pricing based on supply and demand, bulk-purchase discounts, and short-term subsidies for new customers can reduce unsold inventory, expand market coverage, and lower operating costs.

However, the "big-data-driven price discrimination" criticized by the public refers to pricing differences based on primarily on consumers' ability or willingness to pay, consumption levels, or similar personal characteristics, rather than objective factors such as costs or supply and demand. Such practices may undermine market fairness. Some scholars argue that big-data-driven price discrimination is not equivalent to big data differential pricing as a whole, but rather represents one of its problematic forms [7]. Accordingly, this paper focuses on big-data-driven price discrimination as the negative form of differential pricing.

DOI: 10.54254/2753-7048/2026.HZ37904

3. Regulatory challenges and case analysis of big data differential pricing

3.1. Institutional deficiencies in legislation and regulation

Current regulations lack specific criteria for determining unlawful differential pricing. Existing laws generally prohibit unreasonable price discrimination but to not clearly specify how to assess the reasonableness of price differences. Moreover, differences between online and offline transactions make the concept of "equal transaction conditions" more complex, as algorithmic and other technological factors may affect pricing [8]. Platforms may also invoke their pricing autonomy as a defense, resulting in inconsistent regulatory and judicial outcomes in similar cases and weakening enforcement consistency.

Algorithmic systems are often treated as trade secrets, with model structures, weights, and pricing logic generally not disclosed. This creates an "algorithmic black box" that makes it difficult for regulators to understand how pricing decisions are generated and to conduct targeted supervision and accountability [9].

Regulatory responsibilities are also fragmented across different authorities, which can reduce enforcement efficiency. For example, the State Administration for Market Regulation (SAMR) oversees price control, while algorithm registration is managed by the Cyberspace Administration of China (CAC). Such multi-agency regulation can make coordination more difficult and may reduce the efficiency of enforcement.

3.2. Barriers to consumer rights protection

First, information asymmetry exists between consumers and platforms, while consumers have limited access to information about other user groups. As a result, they cannot determine whether the prices shown to them have been raised, making price differences hard to detect. This is particularly difficult when platforms do not directly increase listed prices but instead reduce discounts, adjust coupon, or change promotional conditions.

Second, current litigation generally follows the principle that the party making a claim bears the burden of proof. However, pricing data and algorithmic models are controlled by platforms, leaving consumers with limited evidence, such as order screenshots. This makes it difficult for consumers to obtain sufficient evidence to prove discriminatory pricing. In addition, some goods and services are time-sensitive. By the time consumers initiate legal proceedings, the relevant transaction may already have been completed, further increasing the difficulty of seeking redress [10].

Third, many cases involve small-value, everyday transactions, with individual price differences often ranging from tens to hundreds of yuan. The time and financial costs of preparing and pursuing litigation may far exceed the actual loss, making consumer redress economically unattractive. Consequently, many consumers choose not to pursue their claims, weakening the deterrent effect on platforms.

3.3. Typical cases

Case 1: Ms. Zhu's "Big-Data-Driven Price Discrimination" on an E-commerce Platform

Consumer Ms. Zhu purchased the same product twice from a store on an e-commerce platform and found that the second purchase was 20% more expensive, without any explanation. The seller refused to refund the difference, citing system pricing and promotional activities. It was later found that the seller used algorithms to charge returning customers higher prices based on their purchase

DOI: 10.54254/2753-7048/2026.HZ37904

history and browsing frequency. After mediation, the seller agreed to refund the price difference and make corrections [11]. This case was found to involve big-data-driven price discrimination, and the consumer ultimately received compensation. However, this was an ex-post remedy following a consumer complaint, while effective ex-ante prevention remains limited. As a result, many instances of big-data-driven price discrimination may still go undetected.

Case 2: Dispute over Air Ticket Prices between Consumer Zheng and Ctrip

Consumer Zheng intended to purchase a flight departing at 3:50 PM the next day. When checking availability, the platform indicated the flight was sold out, so Zheng purchased an earlier flight departing at 11:05 AM. After completing the purchase, she checked again and found that seats were available on the originally planned flight, leading to a dispute over the pricing and availability information. Zheng claimed that the platform may have concealed flight information or displayed different information to different users and subsequently filed a lawsuit.

In this case, although the court ultimately found that the price fluctuation was within a reasonable range, the platform's practice of displaying different flight availability information raised concerns about potential discriminatory treatment based on big data [12]. The case also illustrates the difficulty of distinguishing between price adjustments caused by changes in supply and demand and pricing practices that target individual consumers. This ambiguity makes it difficult to determine whether a particular practice constitute big-data-driven price discrimination.

3.4. Summary of contradictions

Current digital pricing governance faces a dual imbalance. First, there is a value imbalance. Platforms pursue efficiency and profit maximization and may overuse algorithmic technologies, turning user data into tools for extracting additional profits from consumers and undermining fair transactions. Second, there is an institutional imbalance: existing laws and regulations focus primarily on restricting unlawful practices, while regulatory tools and consumer redress channels remain inefficient. Most existing cases rely on ex-post remedies after consumer losses have occurred, while effective ex-ante prevention and full-process oversight remain limited. This make it difficult to balance platform business development with consumer rights protection.

4. Pathways to strengthening consumer protection under big data differential pricing

4.1. Refining the legal framework and guidelines

Further clarify the legal criteria for identifying big data differential pricing, particularly the application of concepts such as "identical product" and "equal transaction conditions" in digital transactions. Reasonable price differences arising from changes in supply and demand, cost differences, bulk purchases, and publicly available discounts should be distinguished from unreasonable differential pricing. Meanwhile, coordination among relevant laws and regulations should be improved to reduce regulatory gaps and ensure that most forms of differential pricing are covered by the legal framework.

4.2. Enhancing algorithm transparency and regulatory mechanisms

Clarify the scope of algorithm disclosure and strengthen platforms' obligations to explain their pricing mechanisms, thereby improving algorithmic transparency. Platforms should designate qualified personnel to explain relevant algorithmic operations to regulators and affected consumers,

DOI: 10.54254/2753-7048/2026.HZ37904

while accurately recording data sources and maintaining relevant records [13]. Regulators may use monitoring systems to collect pricing data across multiple accounts, identify potential price differences, and provide early warnings. For repeat violations, penalties should be strengthened, and serious violations may result in restrictions on business operations in accordance with the law.

4.3. Improving the efficiency of consumer redress

Considering shifting the burden of proof where appropriate, requiring consumers to provide initial evidence while platforms bear the burden of demonstrating the legitimacy of the relevant price differences [14]. Consumers may only need to provide preliminary evidence, such as screenshots showing different prices for the same product across accounts. Platforms should then explain and substantiate the legitimate reasons for such differences. This approach could help address the information and technological asymmetry between the two parties. Additionally, simplified procedures should be provided for small-value disputes, and filing and trial procedures should be streamlined. Public interest litigation mechanisms should also be improved to allow qualified authorities or organizations to pursue large-scale cases of discriminatory pricing in accordance with the law.

4.4. Balancing platform operational efficiency and transactional fairness

Distinguish legitimate price adjustments from unlawful differential pricing while preserving platforms' reasonable autonomy in pricing. Differential pricing based on supply and demand, cost differences, and publicly available discounts should be permitted where lawful, so as to avoid unnecessarily restricting the development of the digital economy. Furthermore, consumer awareness should be strengthened through the publication of typical cases, consumer education, and risk warnings. Consumers should be encouraged to compare prices where possible and retain order records and other relevant evidence to protect their rights.

5. Conclusion

Big data differential pricing operates through three main steps (data collection, user profiling, and dynamic price adjustment) and can improve platform efficiency. However, it may also develops into big-data-driven price discrimination, which can seriously infringe consumers' right to fair transactions. Although laws such as *the Consumer Rights and Interests Protection Law* and *the Personal Information Protection Law* have established a basic regulatory framework, the shift from traditional to digital transactions has created new scenarios that existing legal concepts do not fully cover, resulting in unclear standards for identifying unlawful practices. Algorithmic black boxes, inefficient regulatory mechanisms, difficulties in obtaining evidence, and limited redress channels further restrict consumers' ability to protect their legitimate rights. To balance platform development with substantive fairness, responsibilities should be clarified at the legislative, regulatory, platform, and consumer levels. Regulatory mechanisms should be improved, with appropriate penalties and remedies, while preserving platforms' reasonable autonomy in buisiness operations.

This paper focuses mainly on China's current legal framework and domestic platform cases and does not provide a comparative analysis of differential pricing regulations in Europe and the United States or governance practices of overseas platforms. As AI-driven pricing algorithms continue to develop, new forms of big-data based price discrimination may emerge, requiring more refined and adaptive governance. Future research could examine AI-specific regulatory provisions and develop

DOI: 10.54254/2753-7048/2026.HZ37904

more targeted rules for algorithmic pricing to better address the changing needs of the digital economy.

References

[1] Yin, H. (2021). Legal regulation of big data discrimination (Master's thesis, Nanchang University). Master's https://doi.org/10.27232/d.cnki.gnchu.2021.003334.

[2] Liu, X. Q. (2022). Regulation of algorithmic power in operators' differential pricing under big data (Master's thesis, Southwestern University of Finance and Economics). Master's https://doi.org/10.27412/d.cnki.gxncu.2022.003481.

[3] Law of the People's Republic of China on the protection of consumer rights and interests. (2013). Standing Committee of the National People's Congress. https://flk.npc.gov.cn/detail?id=2c909fdd678bf17901678bf7670606ef&fileId=&type=&title=%E4%B8%AD%E5%8D%8E%E4%BA%BA%E6%B0%91%E5%85%B1%E5%92%8C%E5%9B%BD%E6%B6%88%E8%B4%B9%E8%80%85%E6%9D%83%E7%9B%8A%E4%BF%9D%E6%8A%A4%E6%B3%95

[4] Personal information protection law of the People's Republic of China. (2021). Standing Committee of the National People's Congress. https://flk.npc.gov.cn/detail?id=ff8081817b6472a3017b656cc2040044&fileId=&type=&title=%E4%B8%AD%E5%8D%8E%E4%BA%BA%E6%B0%91%E5%85%B1%E5%92%8C%E5%9B%BD%E4%B8%AA%E4%BA%BA%E4%BF%A1%E6%81%AF%E4%BF%9D%E6%8A%A4%E6%B3%95

[5] Internet platform pricing behavior rules. (2025). National Development and Reform Commission, State Administration for Market Regulation, Cyberspace Administration of China. https://www.gov.cn/gongbao/2026/issue_12606/202603/content_7061753.html

[6] Provisions on the administration of algorithm-generated recommendations for internet information services. (2021). Cyberspace Administration of China, Ministry of Industry and Information Technology of the People's Republic of China, Ministry of Public Security of the People's Republic of China, State Administration for Market Regulation. https://www.gov.cn/zhengce/zhengceku/2022-01/04/content_5666429.htm

[7] Liu, Y. Q. (2023). A legal analysis of differential pricing on e-commerce platforms (Master's thesis, East China University of Political Science and Law). Master's https://doi.org/10.27150/d.cnki.ghdzc.2023.001473.

[8] Zhang, H. Z. (2024). Legal regulation of "big data discrimination" by e-commerce platform operators (Master's thesis, Southeast University). Master's https://doi.org/10.27014/d.cnki.gdnau.2024.004141.

[9] Ji, C. C. (2023). Research on consumer rights protection in "big data discrimination" (Master's thesis, Hebei University of Science and Technology). Master's https://doi.org/10.27107/d.cnki.ghbku.2023.000301.

[10] Liu, L. (2026). Research on legal regulation of differential pricing on e-commerce platforms. *E-Commerce Letters*. https://pdf.hanspub.org/ecl_2318842.pdf

[11] Jiangsu Provincial Department of Justice. (2025). Jiangsu releases typical cases on consumer rights protection for 2024. *Jiangsu Provincial Government Legal Affairs Network*. https://sft.jiangsu.gov.cn/art/2025/3/18/art_48524_11522378.html?use_xbridge3=true&loader_name=forest&need_sec_link=1&sec_link_scene=im&theme=light

[12] Cui, P. P. (2023). Consumer rights protection in big data discrimination: An analysis based on judicial cases. *Journal of Anhui Agricultural University (Social Sciences Edition), 32*(3), 88–94. https://doi.org/10.19747/j.cnki.1009-2463.2023.03.012.

[13] Hu, Y. C., & Feng, Y. F. (2022). Exploring the protection of consumers' right to fair trading in big data discrimination. *Journal of Shaanxi Normal University (Philosophy and Social Sciences Edition), 51*(1), 161–176. https://doi.org/10.15983/j.cnki.sxss.2022.0112.

[14] He, C. X., & Pu, M. M. (2026). Research on consumer rights protection in "big data discrimination" practices. *China Price Regulation and Anti-Monopoly*, (7), 66–68. https://doi.org/10.27039/j.cnki.cn10-1219/f.2026.07.004.